

**Reading note on “Mulligan & Rubinstein (2008) – Selection, Investment and Women’s
Relative Wages”**

The objective of the article is to characterize the change in the gender gap and reconcile the observed increasing equality between genders with increasing inequality within a certain gender. To address these questions, the authors construct series of wages for full-time full-year employees (FTFY) since the 1970s using repeated cross sections from the Current Population Survey. To incorporate into the analysis the fact that there is a decision process behind the decision of whether to join or not the workforce, the authors apply Heckman’s two-step estimation and identification at infinity. The findings show that the selection rule for females has changed from negative, in the 1970s, to positive in the 1990’s, indicating that over time more females with larger potential wages are deciding to join the workforce. This change in the composition of the female workforce partially explains the observed reduction of the gender gap.

The authors model the gender gap of potential log wages as $G_t = \gamma_t + \sigma_t^w b_t$, where γ_t represents the difference in the determinants of wages of females compared to males and b_t is a selection bias term capturing the extent to which characteristics of FTFY employed females differ from the average female. Then it follows that the change on this gap over time (ΔG_t) will be determined by changes in the gender specific component of demand ($\Delta \gamma_t$), changes in the dispersion of female wages ($b_{t-1} \nabla \sigma_t^w$), and changes in the selection bias ($\nabla b_t \sigma_t^w$). The authors focus on the evolution of the latter to capture changes in women’s behavior towards employment and wages. To further characterize women’s selection process, the authors follow the Gronau-Heckman-Roy model (GHR) to compare the reservation wages and potential wages, determining that the selection rule varies by factors affecting the individual and factors common to all women.

For the empirical analysis, only white non-Hispanic between the ages of 25 and 54 are selected and divided into educational categories and grouped by years. Then, selection bias coefficients are computed by OLS and Heckman’s two-step model. Comparison in the evolution of the estimates over time, for the same model and across models, yield relevant results. The

two-step model (-0.337 log points) estimates a smaller gender gap than the OLS model (-0.414 log points) for the 1975-1979 period, signaling a negative bias in the estimates. Furthermore, the two-step model estimates a similar gap (-0.339) for the 1995-1999 period while the OLS estimation are almost halved (-0.254). The different results between models for these time periods can be interpreted as a change in the selection rule: in the 1970s women with lower potential wages, compared to the average women, decided to join the workforce, while in 1990s women with higher potential wages decided to join. The change in the selection bias overtime is positive for all demographic groups but has a wide range of variation, presenting a negative relationship between initial employment rates of the group and the variation in the gender gap.

The second part of the empirical analysis is the implementation of identification at infinity. To minimize the selection bias, individuals are selected with a set of characteristics such that their employment rate is as close to full employment as possible (e.g.: never-married, high level of education). To select the groups to include in the regressions, a discrete choice model is estimated and different threshold of probabilities are chosen 80%, 70%, 60%, and 50%. Results signal little variation of the gender gap over time, converging to the range of -0.15 and -0.25 by the end of the period, being larger (more negative) for samples with lower thresholds.

Through the estimation of these two models the authors are able to present estimations on the gender gap that incorporate changes in women's selection rule over time, concluding that this event represents a large share of the variation on the observed gender gap. After controlling for selection, the estimated gender gap presents little variation over time and is above the uncorrected OLS estimation. While the authors correctly address selection bias and changes in the composition of the labor force, one possible limitation is the assumption on homogeneity between genders in their education choices and, consequently, set of skills. The results will be biased by (1) the extent at which genders are accumulating a different set of skills and (2) how the market values this different sets.